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PATENT APPLICATION

ATTORNEY DOCKET NO. 200304388-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): E. David Neufeld et al.

Confirmation No.: 8143

Application No.: 10/039,018

Examiner: Zhuo H. Li

Filing Date: 12-31-2001

Group Art Unit: 2185

Title: Method to Increase the Life Span of Limited Cycle Read/Write Media

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on June 26, 2006.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month
\$120

☐ 2nd Month
\$450

☐ 3rd Month
\$1020

☐ 4th Month
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☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of \$ 500. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

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Rev 10/05 (Ap/Brief)

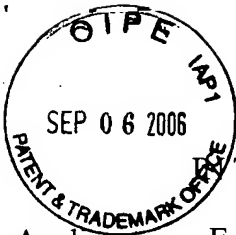
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THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: E. David Neufeld et al.

Serial No.: 10/039,018

Filed: December 31, 2001

For: Method to Increase the Life
Span of Limited Cycle
Read/Write Media

§ Art Unit: 2185

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Examiner: Zhuo H. Li

Atty. Dkt. No.: 200304388-1
(HPC.0032US)

Mail Stop Appeal Brief-Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 1-19 and 28-31 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Company.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-19 and 28-31 have been finally rejected and are the subject of this appeal.

Claims 20-27 have been cancelled.

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IV. STATUS OF AMENDMENTS

No amendment after final was filed.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a method of enhancing a life span of a read/write storage medium (Fig. 1:108, 114, 116, 110), the method comprising the steps of:

identifying whether a file on a read/write storage medium is a static file or a dynamic file (Spec., ¶¶ [0013], [0015], [0018], [0019]);

migrating the file to a dynamic region of the read/write storage medium if the file is a static file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:206, 210, 214); and

migrating the file to a static region of the read/write storage medium if the file is a dynamic file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:204, 208, 212).

Independent claim 13 recites a file system (Fig. 1:112) adapted to enhance a life span of a read/write storage medium (Fig. 1:108, 114, 116, 110), the system comprising:

a means for identifying whether a file on a read/write storage medium is a static file or a dynamic file (Spec., ¶¶ [0013], [0015], [0018], [0019]);

a means for migrating the file to a dynamic region of read/write storage medium if the file is a static file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:206, 210, 214); and

a means for migrating the file to a static region of the read/write storage medium if the file is a dynamic file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:204, 208, 212).

Independent claim 17 recites a computer system (Fig. 1:100) adapted for enhancing a life span of a read/write storage medium (Fig. 1:108, 114, 116, 110), the system comprising:

a processor-executable file system (Fig. 1:112) adapted to:

identify whether a file on a read/write storage medium is a static file or a dynamic file (Spec., ¶¶ [0013], [0015], [0018], [0019]);

migrate the file to a dynamic region of the read/write storage medium in response to identifying the file as a static file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:206, 210, 214); and

migrate the file to a static region of the read/write storage medium in response to identifying the file as a dynamic file (Spec., ¶¶ [0012]-[0014], [0018], [0019]; Fig. 2:204, 208, 212).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Claims 1-19 And 28-31 Rejected Under 35 U.S.C. § 103 Over U.S. Patent No. 6,480,893 (Kriegsman) In View Of U.S. Patent No. 6,230,233 (Lofgren).**

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

A. **Claims 1-19 And 28-31 Rejected Under 35 U.S.C. § 103 Over U.S. Patent No. 6,480,893 (Kriegsman) In View Of U.S. Patent No. 6,230,233 (Lofgren).**

1. **Claims 1, 2, 8-14, 16-18, and 28.**

Independent claim 1 was rejected as being obvious over Kriegsman and Lofgren. It is respectfully submitted that a *prima facie* case of obviousness has not been established with respect to the claimed subject matter for at least the following reason: no motivation or suggestion existed to combine the teachings of Kriegsman and Lofgren. M.P.E.P. § 2143 (8th ed., Rev. 3), at 2100-135.

With respect to claim 1, the Examiner identified Kriegsman as disclosing a static file and a dynamic file. 4/5/2006 Office Action at 3. However, the Examiner conceded that Kriegsman does not teach the two migrating acts of claim 1: migrating the file to a dynamic region of the read/write storage medium if the file is a static file; and migrating the file to a static region of the read/write storage medium if the file is a dynamic file. *Id.* Instead, the Examiner cited Lofgren as disclosing the claim elements that are missing from Kriegsman. *Id.*

Kriegsman discloses a web serving system 10 (depicted in Fig. 1 of Kriegsman) that includes a primary web server 14 and one or more secondary web servers 16. Kriegsman, 5:14-18. The primary web server 14 includes a primary computer 28, storage hardware 30 connected to computer 28, web server software 32, and a primary communications link 38. Kriegsman, 5:52-58. Each secondary web server 16 includes a secondary computer 44, storage

hardware 46 connected to secondary computer 44, web server software 48, and a secondary communications link 54. Kriegsman, 6:27-35. Secondary storage hardware 46 of the secondary web server 16 is used for storing data files that are duplicates of the original data files in primary storage hardware of the primary web server 14. Kriegsman, 6:35-38. Static files that are consuming most of the capacity of the communications link are copied to the one or more secondary web servers 16. Kriegsman, 6:67-7:5. Once the static data files have been copied to the secondary web servers 16, only original dynamic data files need to be transferred through the primary communications link. Kriegsman, 7:63-66. The static data files that are requested by web browsers are transmitted over secondary communications links (rather than the primary communications link). Kriegsman, 7:66-8:3. Kriegsman states that static files are files that are repeatedly transferred in a network of computer systems without changes, while dynamic files are files that are modified for each transfer in the network. Kriegsman, 1:7-12.

Thus, what is taught by Kriegsman is the use of secondary web servers to satisfy requests for static files, and the use of the primary web server to satisfy requests for dynamic files, for the purpose of enhancing communications throughput.

Lofgren, on the other hand, describes a mass storage system made of an EEPROM memory 11 that is organized in memory banks, with Lofgren describing the moving of data between heavily used and least used banks of the EEPROM memory 11 to achieve wear leveling. Lofgren, 5:18-23. In other words, the concerns of Lofgren are completely unrelated to the concerns of Kriegsman, and therefore, a person of ordinary skill in the art would not have been motivated to combine the teachings of Kriegsman and Lofgren to achieve the claimed subject matter.

Clearly, the teachings of Kriegsman provide no suggestion of migrating a static file to a dynamic region of a read/write storage medium, and migrating a dynamic file to a static region of *the* read/write storage medium. Rather, a person of ordinary skill in the art looking to the teachings of Kriegsman would have been taught to provide static files on separate web servers (that are separate from a primary web server) to achieve enhanced communications speeds when responding to requests for static files and dynamic files from web browsers.

Additionally, a person of ordinary skill in the art would not have been motivated to modify the teachings of Kriegsman based on the teachings of Lofgren. As noted above, Lofgren refers to moving data between heavily used and least used banks of an EEPROM memory 11 to achieve wear leveling. This goal of Lofgren is clearly inconsistent with the goal of Kriegsman, which is to separate dynamic files and static files on completely different storage media associated with different primary and secondary web servers. If the teachings of Lofgren were to be applied to Kriegsman, then a person of ordinary skill in the art would have been led to storing both the dynamic and static files of Kriegsman in a single storage medium (the one with the least wear) associated with a web server in Kriegsman, which directly contradicts the stated goal of Kriegsman (to distribute static files to separate secondary web servers so that a communications bottleneck does not occur at the primary web server). Clearly, modifying Kriegsman based on the teachings of Lofgren would defeat the intended purpose of Kriegsman, which is a clear indication that no motivation or suggestion existed to combine the teachings of Kriegsman and Lofgren to achieve the claimed invention. “If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” M.P.E.P. § 2143.01, at 2100-137.

The following is another basis to support Appellant's arguments that no motivation of suggestion existed to combine the teachings of Kriegsman and Lofgren. By teaching that dynamic files are kept in a primary web server and static files are kept in a secondary web server, Kriegsman is actually teaching that the dynamic files be maintained in the storage hardware of the primary web server. The continued storage of dynamic files in the storage hardware of the primary web server necessarily means that the storage hardware of the primary web server would be subject to more wear than the storage hardware of the secondary web server, which contains static files that do not change. Yet Kriegsman specifically teaches that the dynamic files should remain in the primary web server to achieve enhanced communication speeds. This teaching of Kriegsman is directly inconsistent with the teachings of Lofgren and what is recited in the claim. The migrating of a static file to a dynamic region and a dynamic file to a static region, as performed in claim 1, is for enhancing a lifespan of a read/write storage medium. In contrast, Kriegsman teaches the opposite, requiring that its dynamic files remain in the same location, the primary web server. Therefore, it is clear that the objective evidence of record establishes that a person of ordinary skill in the art would not have been led to combine the teachings of Kriegsman and Lofgren to achieve the claimed subject matter, and in any event such a hypothetical combination would not have achieved the claimed subject matter.

In the final Office Action dated April 5, 2006, the Examiner also made the following assertions:

(1) non-obviousness cannot be shown by attacking references individually where the rejections are based on combinations of references; and

(2) "the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed

invention must be expressly suggested in any one or all of the references[; rather] the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” 4/5/2006 Office Action at 8.

With respect to point (1) above, Appellant’s arguments cannot be properly characterized as attacking references individually – Appellant merely provided explanations of what each of the references taught, and why a person of ordinary skill in the art would not have been motivated to combine the teachings of these references based on the actual teachings of the references. As stated by *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), a case also relied upon by the Examiner, the PTO has the burden of establishing a *prima facie* case of obviousness, and the PTO can satisfy this burden “only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art will lead that individual to combine the relevant teachings of the references.” *In re Fine*, 837 F.2d at 1074. Thus, it is clear from well-established case law that the actual teachings of the references are *highly relevant* in determining whether any evidence exists of the required motivation or suggestion to combine references in the context of an obviousness rejection. Therefore, Appellant’s discussion of the references in pointing out why a *prima facie* case of obviousness has not been established is entirely proper.

As to point (2) made by the Examiner, the Examiner has mischaracterized Appellant’s arguments. Appellant is not arguing whether features of Lofgren can be bodily incorporated into the structure of Kriegsman, the primary reference. Rather, Appellant is arguing that based on the teachings of Kriegsman and Lofgren, a person of ordinary skill in the art would clearly not have been motivated to modify the teachings of Kriegsman based on the teachings of Lofgren. As stated by the M.P.E.P., one of the factors considered in determining the appropriateness of

modifying a primary reference based on teachings of a secondary reference is whether the proposed modification would render the reference being modified unsatisfactory for its intended purpose. M.P.E.P. §2143, at 2100-137. If so, then there is no suggestion or motivation to make the proposed modification. *Id.*; *see also In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) (holding that a *prima facie* case of obviousness was not established where the proposed modification of the apparatus of the cited reference would render the apparatus inoperable for its intended purpose).

Therefore, Appellant has properly established that the Examiner has failed to establish a *prima facie* case of obviousness. Claim 1 (and its dependent claims) are therefore allowable over Kriegsman and Lofgren. Independent claims 13 and 17 (and their respective dependent claims) are also similarly allowable.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

2. Claims 3-5, 7, 15, 19, and 30.

Claims 3-5, 7, 15, 19, and 30 depend (indirectly) from respective independent claims 1, 13, and 17, and are thus allowable for at least the same reasons as corresponding independent claims. Moreover, claim 3 recites that the step of identifying whether a file on a read/write storage medium is a static file or a dynamic file comprises comparing the number of rewrite cycles of the file to a predetermined read/write cycle threshold.

The Examiner cited column 5, lines 56-65, of Lofgren as disclosing this feature of claim 3. The cited passage refers to determining when wear leveling is necessary by comparing the number of block writes which have occurred to the present time in each of the memory banks, either by total number of block writes or some type of average of cycles of blocks within the

bank. The cited passage also states that when the numbers of block writes becomes skewed in excess of a set threshold amount, then a wear leveling processing is initiated. Note that the threshold mentioned refers to threshold on wear of memory banks; this threshold is not used for the purpose of identifying whether a particular file on a storage medium is a static file or a dynamic file. Therefore, in addition to the arguments presented above, it is noted that the hypothetical combination of Kriegsmann and Lofgren fails to teach or suggest all elements of claim 3 (and its dependent claims).

Dependent claims 15 and 19 are allowable for similar reasons.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

3. Claim 6.

Claim 6 depends from claim 3, and is thus allowable for at least the same reasons as claim 3. Moreover, claim 6 recites that the predetermined rewrite cycle threshold is based on self-testing by performing rewrite cycles to a data block of the read/write storage medium until the data block is unstable.

With respect to claim 6, the Examiner cited column 4, lines 12-61, and column 6, line 56-column 7, line 62, of Lofgren as disclosing the recited subject matter. The cited column 4 passage of Lofgren refers to tracking the total number of block writing cycles that have been initiated to the memory array. Also, the cited column 4 passage of Lofgren refers to noting a maximum usage of any of the banks, and calculating the total number of block writes which could have been accomplished if each bank of memory were used to exactly the same amount. Lofgren, 4:46-50. Moreover, the column 4 passage of Lofgren states that “[t]his is the ideal, perfect even wear of the memory that is a goal of the wear leveling process.” The cited column 4

passage of Lofgren also states that the ideal, perfect even wear of the memory is compared with the total number of erase and write cycles that have occurred in the memory, with the arithmetic difference being indicative of how far the system is operating from the ideal. The cited passage in columns 6 and 7 of Lofgren refers to the procedure for performing wear leveling control of the memory system. The cited passage in columns 6 and 7 of Lofgren also refers to comparing maximum and minimum bank usage numbers to determine whether they differ by more than some number, and if so, performing wear leveling control accordingly. However, nowhere within these cited passages of Lofgren, or anywhere else in Lofgren or Kriegsman, is there any suggestion of the predetermined rewrite cycle threshold (for identifying whether a file is a static file or a dynamic file) being based on *self-testing* by performing rewrite cycles to a data block of the read/write storage medium until the data block is unstable.

In view of the foregoing, it is respectfully submitted that claim 6 is further allowable over Kriegsman and Lofgren for the above reasons.

Reversal of the final rejection of the above claim is therefore respectfully requested.

4. Claims 29 and 31.

Claims 29 and 31 depend indirectly from respective independent claims 1 and 13, and thus are allowable for at least the same reasons as corresponding independent claims.

Moreover, claim 29 recites that identifying whether the file is a static file or a dynamic file comprises *reclassifying* the file based on a number of rewrite cycles to the file, from the *initial* identification of a static file or a dynamic file.

In the rejection of claim 29, the Examiner referred to the rejection of claim 15. 4/5/2006 Office Action at 7. The rejection of claim 15 refers to the rejection of claim 3. *Id.* at 5. Claim 3 states that identifying whether a file is a static file or a dynamic file is based on comparing the

number of rewrite cycles of the file to a predetermined write cycle threshold. However, claim 3 does not recite *reclassifying* a file from an initial identification of a static file or a dynamic file, as recited in claim 29. Nowhere within Kriegsman or Lofgren is there any suggestion of the reclassifying performed in claim 29. Therefore, claim 29 is further allowable for the above reasons.

Dependent claim 31 is also further allowable for similar reasons.

Reversal of the final rejection of the above claims is respectfully requested.

VIII. CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

Date: _____

Aug 31, 2006

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APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

- 1 1. A method of enhancing a life span of a read/write storage medium, the method
2 comprising the steps of:
3 identifying whether a file on a read/write storage medium is a static file or a
4 dynamic file;
5 migrating the file to a dynamic region of the read/write storage medium if the file
6 is a static file; and
7 migrating the file to a static region of the read/write storage medium if the file is a
8 dynamic file.
- 1 2. The method of claim 1, the identifying step comprising the step of:
2 counting a number of rewrite cycles of the file.
- 1 3. The method of claim 2, the identifying step comprising the step of:
2 comparing the number of rewrite cycles of the file to a predetermined rewrite
3 cycle threshold.
- 1 4. The method of claim 3, wherein the predetermined rewrite cycle threshold is
2 associated with a read/write storage medium identifier.
- 1 5. The method of claim 3, wherein the predetermined rewrite cycle threshold is
2 associated with a drive identifier for the read/write storage medium.
- 1 6. The method of claim 3, wherein the predetermined rewrite cycle threshold is
2 based on self-testing by performing rewrite cycles to a data block of the read/write storage
3 medium until the data block is unstable.

1 7. The method of claim 3, wherein the predetermined rewrite cycle threshold is
2 stored in a file allocation table.

1 8. The method of claim 2, wherein the number of rewrite cycles of the file is stored
2 in a file allocation table.

1 9. The method of claim 1, wherein the read/write storage medium comprises a
2 compact disk read/write disk.

1 10. The method of claim 1, wherein the read/write storage medium comprises a tape
2 drive.

1 11. The method of claim 1, wherein the read/write storage medium comprises a
2 floppy disk drive.

1 12. The method of claim 1, wherein the read/write storage medium comprises an
2 electrically erasable medium.

1 13. A file system adapted to enhance a life span of a read/write storage medium, the
2 system comprising:

3 a means for identifying whether a file on a read/write storage medium is a static
4 file or a dynamic file;

5 a means for migrating the file to a dynamic region of read/write storage medium if
6 the file is a static file; and

7 a means for migrating the file to a static region of the read/write storage medium
8 if the file is a dynamic file.

1 14. The file system of claim 13, the means for identifying comprising:
2 a counter to count a number of rewrite cycles of the file.

1 15. The file system of claim 14, the means for identifying comprising:
2 a means for comparing the number of rewrite cycles of the file to a predetermined
3 rewrite cycle threshold.

1 16. The file system of claim 13, the means for identifying comprising:
2 a means for identifying a file type of the file, wherein the file is initially identified
3 as static or dynamic based on the file type of the file.

1 17. A computer system adapted for enhancing a life span of a read/write storage
2 medium, the system comprising:
3 a processor-executable file system adapted to:
4 identify whether a file on a read/write storage medium is a static file or a
5 dynamic file;
6 migrate the file to a dynamic region of the read/write storage medium in
7 response to identifying the file as a static file; and
8 migrate the file to a static region of the read/write storage medium in
9 response to identifying the file as a dynamic file.

1 18. The computer system of claim 17, wherein the file system identifies the file as a
2 static file or dynamic file based on counting a number of rewrite cycles of the file.

1 19. The computer system of claim 18, wherein the file system identifies the file as a
2 static file or dynamic file based on comparing the number of rewrite cycles of the file to a
3 predetermined rewrite cycle threshold.

1 28. The method of claim 1, wherein identifying whether the file is a static file or a
2 dynamic file comprises initially identifying whether the file is a static file or a dynamic file based
3 on a type of the file.

1 29. The method of claim 28, wherein identifying whether the file is a static file or a
2 dynamic file comprises reclassifying the file, based on a number of rewrite cycles to the file,
3 from the initial identification of a static file or a dynamic file.

1 30. The method of claim 3, further comprising setting the predetermined rewrite cycle
2 threshold based on a type of the read/write storage medium.

1 31. The file system of claim 16, wherein the means for identifying whether the file is
2 a static file or dynamic file reclassifies the file, based on a number of rewrite cycles to the file,
3 from the initial identification of a static file or a dynamic file.

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Appeal Brief Under 37 C.F.R. § 41.37

EVIDENCE APPENDIX

None.

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RELATED PROCEEDINGS APPENDIX

None.